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## THE JONES-MILLER SITE: AN EXAMPLE OF HELL GAP BISON PROCUREMENT STRATEGY

by  
Dennis J. Stanford

During June to October of 1973, 1974, and 1975, the Smithsonian Institution, with funding from a National Geographic Society research grant, excavated a Hell Gap site near Wray, Colorado. The Jones-Miller site was found by Robert B. Jones, Jr., while he was constructing a circular irrigation system in 1972. Jones observed a large quantity of bison bone and, upon examining the area closely, he found several Hell Gap points. He realized their potential significance and discontinued his dirt-moving operations. The site was called to the attention of Jack Miller, a former Anthropology instructor at Colorado State University. Miller, along with his father, Ruben Miller of Sterling, Colorado, and Mike Toft, a student at Colorado State University, conducted preliminary excavations during the summer of 1972. After finding several hundred bison bones and a number of Hell Gap artifacts, Miller notified Dr. James Judge, University of New Mexico, of the find, who in turn contacted the Smithsonian Institution.

The site is situated at the head of a shallow draw that drains into a tributary of the Arikaree River in northeastern Colorado. The surrounding countryside is currently planted in corn, wheat, and pasture. Prior to being homesteaded, the land was terrace grassland, dominated by western wheatgrass, threeawn, needle-and-thread, foxtail barley, and Indian ricegrass. Evidence from the excavation suggests that at the time of site deposition the climate was cooler than at present with more effective moisture comparable to present conditions at 1,800-2,400 m above sea level at the same latitude, but more equable. Tentative results are consistent with a regime of a snowy winter and a relatively dry summer and fall. This precipitation pattern, combined with a moist spring caused by the melting of accumulated snow, would have resulted in high grass productivity. The Arikaree valley

itself probably had a deciduous woodland on the river bottom, and along its tributaries. The terrace and drier slopes would have been tall to mixed grasslands and meadows, with scattered trees. Conifers may have occurred along the outcrops of the Ogallala formation and along some of the more well-drained escarpments of the High Plains. The environment of the Jones-Miller site was probably an open tall or tall-to-mid grassland with scattered deciduous trees and a small temporary pond or slough fed by overflow from a small tributary to the south of the site.

The draw in which the bison bones were found is about 45 cm deep and 30 m wide. It cuts the third terrace of the Arikaree River, which is composed of colluvial loessial sediments. Another shallow draw is located approximately 45 m to the west of the site. During the 1974 field season, bison bones were found in this second drainage at the same level as in the main bone bed, but their relationship to the site is unknown. A narrow finger of uneroded Pierre Shale separates the two drainages. Several fire hearths have been located in the second area; however, no diagnostic artifacts have been found in the hearth area.

The bone bed is an average of 30 m long by 20 m wide (Fig. 10.1). It consists of the remains of nearly 300 totally disarticulated animals that have been identified as *Bison antiquus*. The disarticulated remains are associated with Hell Gap projectile points in several nonrandomly structured butchering areas. In many cases, certain bone elements, or series of bone elements, which represent butchering units are found in what appear to be refuse piles. For example, the humerus and radius-ulna are found disarticulated but associated with each other in specific areas of the butchering clusters. In many cases, these butchering units have only the bones from one side of several animals, so that all remains



Fig. 10.1. The Jones-Miller test trench, showing the greatest concentration of bison bone.

are either right or left sides. Few articulated bones are present. Most articulations consist of small vertebral sections and lower leg units, such as metapodials and phalanges. Only a small number of skulls have been found, and most were thoroughly butchered. The butchering, then, seems to be nearly complete, with no articulated animals wasted.

Bison population studies suggest that the site represents the results of more than one

kill; various kills took place at differing seasons, possibly fall, winter, and spring. While this work establishes a minimum number of separate kills, it does not imply a necessary maximum. Apparently, all of the kills were of nursery herds composed primarily of cows and their calves and yearlings, with very few bulls. This discovery suggests a strong predator-prey relationship between the bison and Paleo-Indian populations, with the

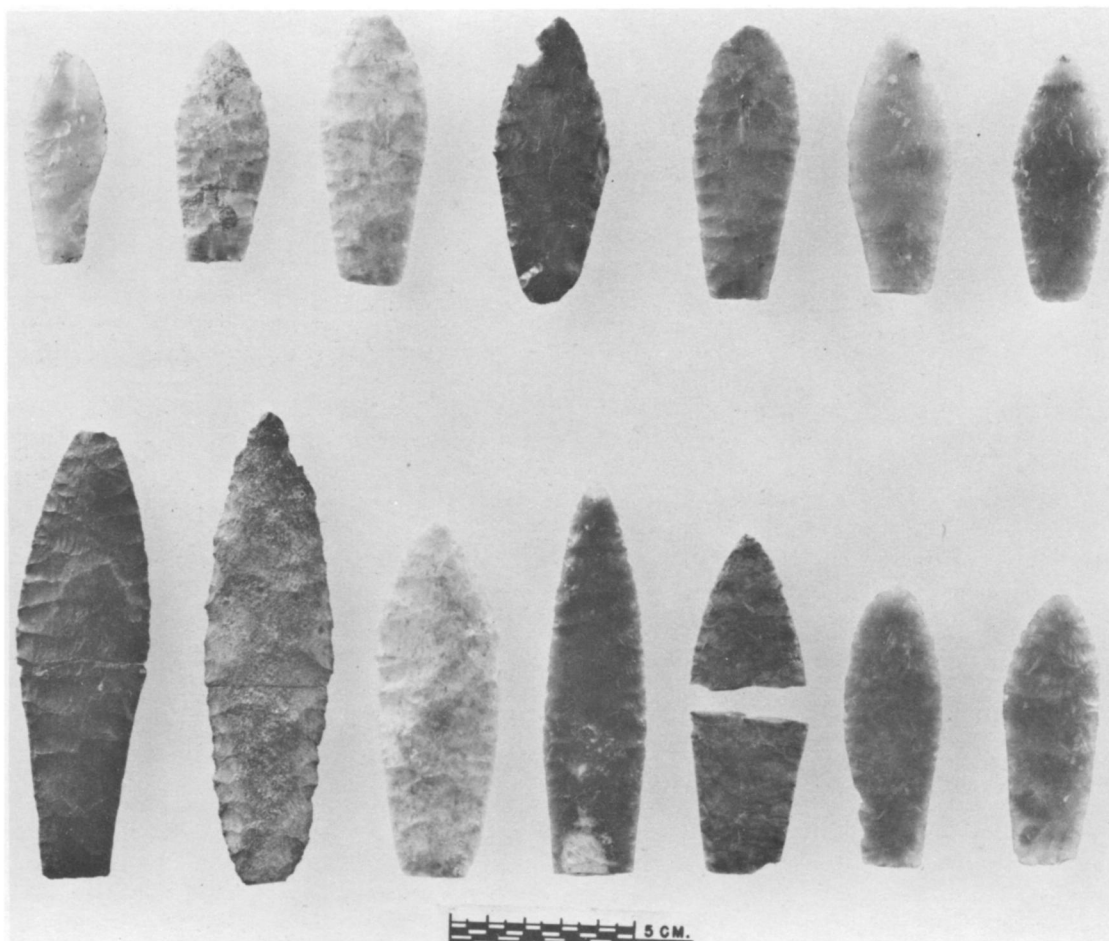


Fig. 10.2. Hell Gap projectile points from the Jones-Miller site.

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In addition to bison bone, a few remains of a dog-sized canid are present. Other faunal remains include meadow vole, western jumping mouse, fox squirrel, and shrews. Small

lizards, snakes, and frogs are common, along with shore and song birds. Several species of gastropods and other molluscs were also recovered.

Over 130 flaked stone artifacts and 200 bone artifacts were recovered. Of these, 104 are projectile points or fragments of points (Figs. 10.2-10.5); this includes 31 complete points and 73 broken points and impact flakes (Fig. 10.5). All of the projectile points conform to the Hell Gap type, but tend to have slight shoulders, which approach the Agate Basin type. Eleven side scrapers or cutting tools were recovered (Fig. 10.6), one of which was made on a blade. Only one end scraper was found, and it has an unusual amount of polish on the distal end.

Lithic analysis suggests that the major varieties of stone material includes Spanish Diggings chert from east-central Wyoming;



Fig. 10.3. Hell Gap projectile points from the Jones-Miller site.

Niobrara chert from south-central Nebraska and north-central Kansas; Flat Top flint from northeastern Colorado; Bijou Basin petrified wood from central Colorado; and Alibates dolomite from the Texas Panhandle. All of these sources are located on the High Plains plateau; the north-south dimension of the area indicated is on the order of about 960 km, and the east-west axis runs for over 320 km. This large geographical spread raises the question of whether the stone came to the site through the union of several bands at a central place, through the epicircular travels of a single band, through the efforts of a small number of specialized flint workers from a single band, or through regional trade of materials. Because the lithic technology represented at the Jones-Miller site is homogeneous and clearly distinguishable from that observable at other Hell Gap sites, this site may offer special insight into this problem.

Over 200 bone tools have been recovered. Most of these were used in the various butchering activities, and include mandible,

tibia, and femur choppers, along with humerus scrapers and various modified rib tools. All of these tools show deliberate breakage to produce sharp edges and have evidence of wear and resharpening. Additional bone artifacts include a drilled bone that is believed to have been a flute. This tool has a hole drilled completely through the long axis, with at least one interesting intersecting hole drilled from the top. The tool was broken just behind the intersecting hole, so it is impossible to determine if there were additional holes. A long, narrow, cylindrical shaft was found which is probably an awl. Another bone tool worthy of special mention is a tiny round object that has a notch cut completely around its circumference. Although no function has been ascribed to this tool, it is felt that it was a decorative object rather than a utilitarian artifact.

The most unusual feature found was a large post mold located near the center of the butchering area (Fig. 10.7). The post mold is 22 cm in diameter, and it extends 46 cm below the bone bed. It is felt that it was buried too

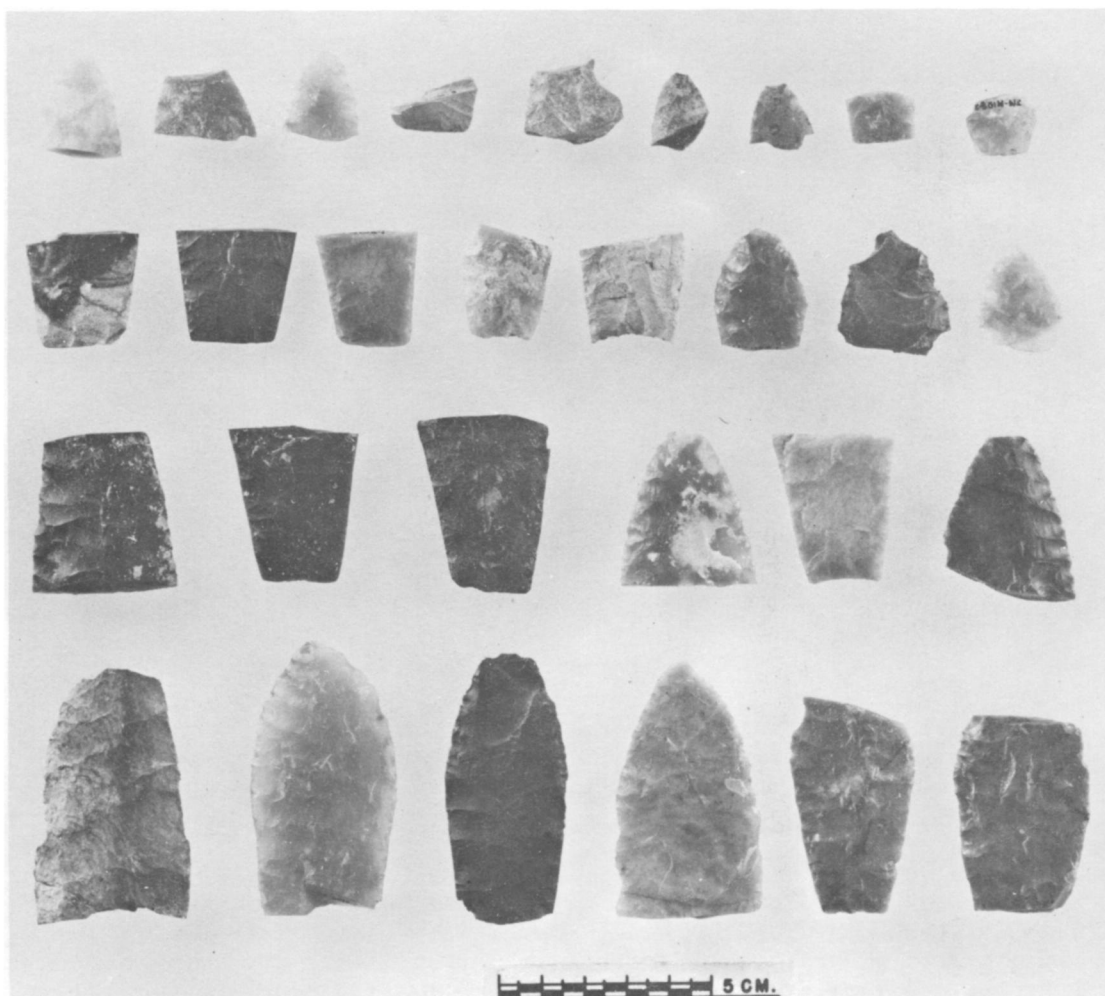


Fig. 10.4. Hell Gap projectile points from the Jones-Miller site.

shallowly to support any heavy weight or stress. Therefore, it seems to have been nonfunctional in the butchering process. It is important to note that the flute, an extremely tiny but complete projectile point (Fig. 10.8), and butchered canid remains were found in immediate proximity to the post mold.

During the 1974 field season, a backhoe trench uncovered bison bones in a buried draw 80 m west of the Jones-Miller site (Stanford 1974:30). Geological investigation indicated that these bones were in the same stratigraphic horizon as those from the site; it was reasoned that this second draw may have been a kill site associated with the butchering site. Therefore, three 2 m squares were excavated adjacent to the backhoe trench to a depth of 4 m. A skull fragment, two scapulae,

and a rib fragment were recovered from these trenches. Two additional backhoe trenches were then dug, cutting both to the north and south of the excavated squares. As there were no additional faunal remains or any cultural artifacts found in these cuts, it is now assumed that this area was neither a kill site, nor was it associated with the Jones-Miller site.

The hearth area, which was also found during the 1974 field season, failed to yield any diagnostic cultural remains that would positively identify its cultural affiliation (Stanford 1974:30). This feature appears to have been a large hearth area, associated with red and yellow ochre. Apparently, the activity which took place around this hearth did not involve either faunal or lithic remains.

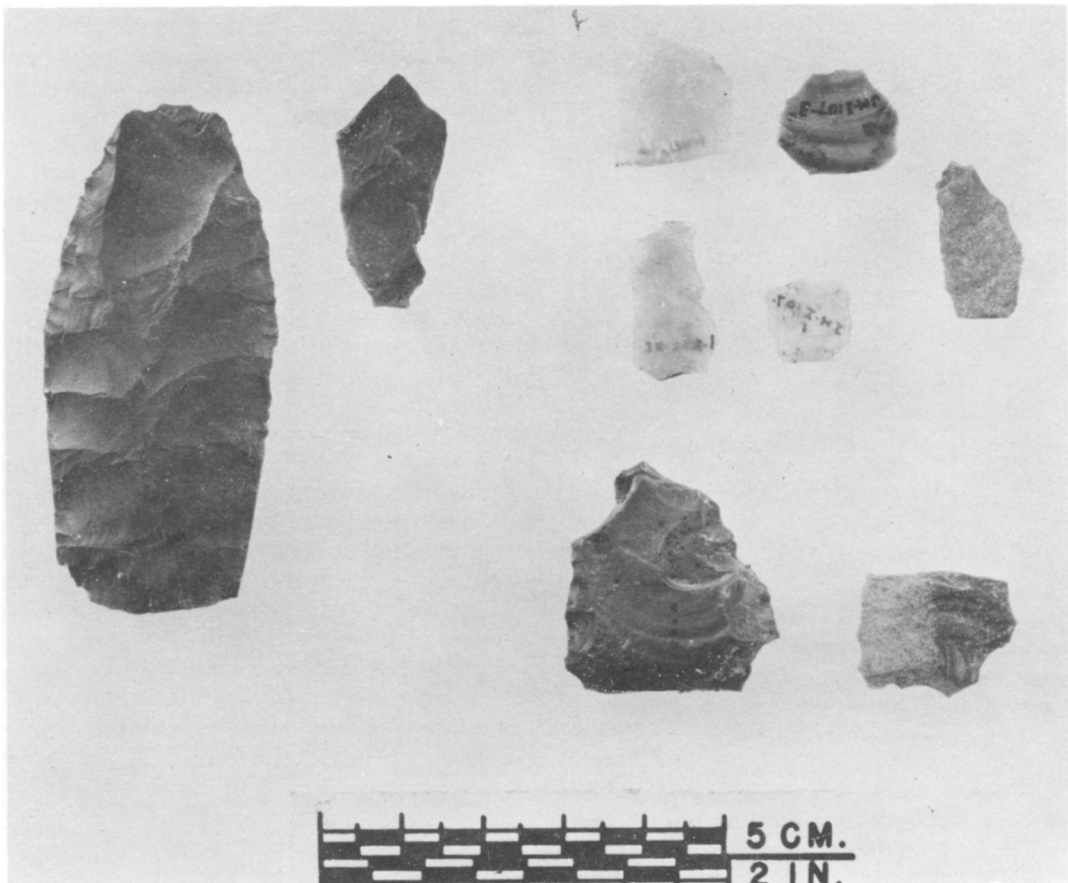


Fig. 10.5. Hell Gap projectile points that illustrate impact fluting and impact flutes.

Although the analysis of the Jones-Miller site excavations and artifacts is yet to be finished, a number of working hypotheses can be discussed at this time. However, the reader must be cautioned that these are not final conclusions and that they will be modified, corrected, and elaborated as the study continues. The hypotheses to be presented are based on a comparison of the Jones-Miller data to analogous ethnohistoric descriptions of hunters trapping bison in constructed pounds, in which much of the physical evidence for the trap would have been ephemeral and would not have been preserved for the archaeological record. There are, however, many striking similarities between the historic situations and the Jones-Miller evidence.

The use of the pound for the trapping of bison has been reported for many of the historic Northern Plains Indians (Arthur 1974;

Denig 1930; Hind 1971; MacDougall 1896). The historic traps were usually constructed in areas where there were gently rolling plains and prairies away from the mountains. The traps were situated on the south or east sides of gently sloping hills where timber grew, with the country to the north and west relatively open (MacDougall 1896:273). Brush was cleared from the draw in which the kill was to take place, with loose brush piled around the enclosure. In many cases, a tree was left in the center of the pound, or a pole would be erected there if no tree was available. This pole was known as the "medicine post," and around it would be placed offerings for a successful kill. Outside the area of the pound would be a large tent or shelter "facing the setting sun" in which the hunt chief would hold religious ceremonies for several days prior to the kill. Integral to these ceremonies was the burning of incense in several smudge



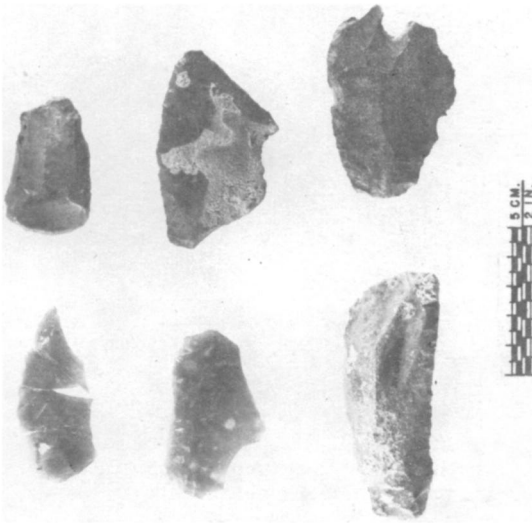


Fig. 10.6. Side and end scrapers from the Jones-Miller site.

fires. Often, if the kill was to take place during the winter, and draws were full of blown snow, the buffalo would be driven into a draw; the hunters would kill the animals as they floundered in the snowdrifts (Kennedy 1961:106).

Although extensive exploration and testing have been conducted to find a nearby camp or kill site, none have been located. This is due either to chance in finding the locations, to the inability of the geographical locations to withstand geological weathering, or to the fact that the bone bed and the kill site are one and the same. This latter idea is, in part, now substantiated by the fact that many of the bones reported as missing after the 1974 excavation have now been found. This situation probably occurred because of the nature of the organized butchering process in which the bison bone elements were treated independently and subsequently distributed across the site in a nonrandom pattern.

Further evidence which points to the Jones-Miller site as both the kill and the butchering site is based on the above description of the historic data and the recovered archaeological evidence. More specifically, (1) the single post mold found in the center of the site could be analogous to the "medicine post"; (2) "nonfunctional" artifacts of a ceremonial nature were found around the post mold (these artifacts could be compared with the offerings placed around

and on the medicine post by the historic hunt chiefs); and (3) the hearth area found to the west of the bone bed contained both red and yellow ochre, both of which are often associated with ceremonial activities. This hearth area could possibly be analogous to the ceremonial lodge.

All of the geographical requisites necessary for a bison pound during the historic period are present in our reconstruction of the paleo-topography of the Jones-Miller site: (1) the site is located on the southeast side of a gently sloping hill, and (2) the country to the north and west is open. The paleo-ecological reconstruction indicates that trees were growing to the north and west sides of the draw in which the bones were found, as well as presumably in the river bottom to the south and east. It has also been demonstrated that the predominant wind direction was from the northwest. Given the winter aspect of the site, it is felt that these conditions would have allowed for a deep snowdrift to fill the draw in which the site is located, with the bison being driven into the snowdrift and dispatched by hunters around the edge of the draw.



Fig. 10.7. Large post mold near the center of the bison bone concentration, believed to be the remains of a medicine post.



With the many similarities between the Jones-Miller site and the historical accounts, the conclusion now offered tentatively is that the site represents a pound kill in which snow was utilized as the major trapping medium. Perhaps, a ramp manufactured from frozen water and manure was used to hasten the bison into the snowbank, such as reported from Cree kills (Ewers 1968:163). The bison would then have been butchered in the pound, with the snow acting as a freezing agent to keep the meat fresh until complete butchering was accomplished.

It is also felt that the campsite, which has not been found, may have been located along the floor of the Arikaree valley and the lodges spaced out so that there would be sufficient wood for each group. During the winter when meat was needed, the hunters would get together and impound the buffalo. This apparently happened several times at the Jones-Miller site.

If our assumptions about the post mold, offerings, and ceremonial lodge are correct, one must postulate 10,000 years of socioreligious continuity on the Northern Plains. This is a thought which is indeed worthy of careful consideration. If it is proven correct, it could

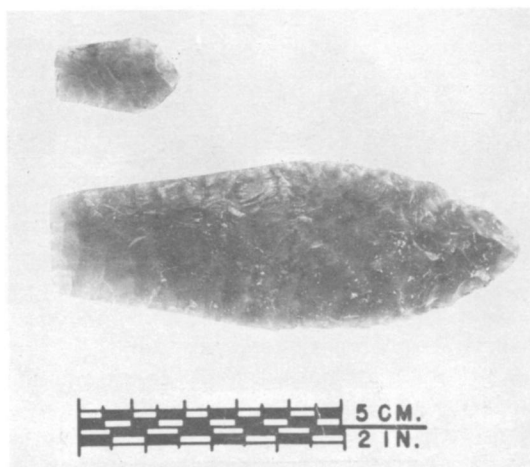


Fig. 10.8. Hell Gap projectile points from the Jones-Miller site that illustrate size difference.

alter our theoretical conception of the development of Plains Indian culture and the complexity of Paleo-Indian society. I believe that we have been able to demonstrate that the Jones-Miller site supports the hypothesis of a complex, ritualized, planned bison kill. This conclusion is contrary to present ideas in which Paleo-Indian bison killing is viewed as fortuitous (Kehoe and Kehoe 1968:29; Wheat 1972:96).